

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

In the Matter of the Application of)

HAWAIIAN ELECTRIC COMPANY, INC.)

DOCKET NO. 2007-0365

For Approval to Commit Funds in)
Excess of \$2,500,000 (Excluding)
Customer Contributions) for Item)
P7650000, the Waiiau 8 Boiler)
Control System Upgrade Project)

DECISION AND ORDER NO. 23983

Filed Jan. 28, 2008

At 2 o'clock P.M.

Karen Higashi.
Chief Clerk of the Commission

ATTEST: A True Copy
KAREN HIGASHI
Chief Clerk, Public Utilities
Commission, State of Hawaii.

Karen Higashi

DIV. OF CONSUMER ADVOCACY
DEPT. OF PUBLIC UTILITIES AND
CONSUMER AFFAIRS
STATE OF HAWAII

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P7650000, the Waiau 8 Boiler)
Control System Upgrade Project)

Docket No. 2007-0365
Decision and Order No. 23983

DECISION AND ORDER

By this Decision and Order, the commission approves HAWAIIAN ELECTRIC COMPANY, INC.'s ("HECO") request to commit approximately \$3,987,730 for Item P7650000, the Waiau 8 Boiler Control System Upgrade Project ("Project"), in accordance with Paragraph 2.3(g)(2) of the commission's General Order No. 7, Standards for Electric Utility Service in the State of Hawaii, ("G.O. No. 7").

I.

Background

A.

Application

HECO is a Hawaii corporation organized under the laws of the Kingdom of Hawaii on or about October 13, 1891, and now exists under and by virtue of the laws of the State of Hawaii. HECO is an operating public utility engaged in the production,

purchase, transmission, distribution, and sale of electricity on the island of Oahu.

On October 31, 2007, HECO filed its application,¹ requesting that the commission approve the commitment of funds for the Project, in accordance with Paragraph 2.3(g)(2) of G.O. No. 7. The total estimated cost of the Project is \$3,987,730, as shown in Exhibit III of the Application. Details of the Project are set forth below.

1.

Project Description

As described in the Application, Waiau Unit 8 is an 81.6 megawatt ("MW") steam unit that was commissioned on November 20, 1968. The boiler was manufactured by Combustion Engineering with forced draft, gas recirculation, three elevations of tangentially fired burners, and a constant pressure oil supply system with diesel igniters.² HECO explains that the function of the boiler control system is to safely manage the firing rate within the boiler to maintain the appropriate steam production under all operating conditions. The system includes boiler controls, operator interfaces, power conditioning and control equipment, unit data trending displays,

¹See HECO's Application, Exhibits I-IV, Verification, and Certificate of Service, filed on October 31, 2007 ("Application").

²See id. at 2.

historical archiving equipment, an annunciator system, and associate field devices.³

The proposed scope of work for the Project consists of modernizing the existing Waiau 8 pneumatic controls and instrumentation, including: (1) installing liquid crystal display ("LCD") based operator interfaces; (2) upgrading power conditioning and control equipment; (3) displaying unit data trends and annunciation on the LCD interfaces; (4) installing historical archiving within the distributed control system ("DCS"); (5) replacing existing obsolete DCS system components; (6) installing redundant transmitters for critical control loops; and (7) incorporating the boiler control logic into the DCS.⁴

2.

Project Schedule

The proposed work is currently scheduled to be completed during a 13-week unit overhaul that begins in May 2010 and ends in August 2010. HECO represents that there are currently no scheduled maintenance overhauls on Waiau 8 following this date (through 2011) that are long enough in duration to perform the proposed boiler control system upgrade work.

³See id. at 3.

⁴HECO states that the proposed work for the Project is similar to that of the previously approved Kahe 3 and Kahe 4 Boiler Control System projects, which the commission approved in Decision and Order No. 19774, filed on November 15, 2002, in Docket No. 02-0206, and Decision and Order No. 19728, filed on October 24, 2002, in Docket No. 02-0207, respectively.

HECO requests commission approval of the Project by February 1, 2008 in order to meet the current overhaul schedule.

3.

Project Justification

In support of the Project, HECO explains that the existing boiler control system is a combination of microprocessor-based logic and pneumatic (air-operated) controls that operate with mechanical devices, and that much of the boiler control system is the original equipment installed when the unit was built in 1968. According to HECO, pneumatic control technology is being phased out of the power generation industry and replaced with more reliable and flexible microprocessor-based electronic systems. "In addition, spare and/or replacement parts for pneumatic control systems of this vintage are scarce and very expensive."⁵

HECO further asserts that, in addition to being costly to maintain, the existing boiler control system is highly susceptible to drift and instability⁶ since it relies on mechanical instrumentation for input and control of the boiler:

Drift and instability usually occur as pneumatic equipment/hardware age and mechanical parts lose their precision and control. The control equipment/hardware (e.g., final control elements such as damper

⁵Id. at 4.

⁶HECO defines "drift" as "deviations from a desired control set point without any changes made to the input signal." Id. at 4 n.2. HECO defines "instability" as "the system's inability to repeat and hold a desired control set point given an input signal." Id.

drives, positioners) involves tolerances that are in the fractions of an inch, such that, even slight deviations in positioning and/or movement could have a significant effect on the response of the boiler control system. Deviations in positioning and/or movement of such equipment could reduce the response time of the boiler controls to the point where efficiency is compromised. Significant deviations could potentially place the unit in jeopardy from the standpoint of safe operation.⁷

In addition, HECO contends that an upgraded boiler control system will offer increased reliability, flexibility, and enhanced equipment response time. In this regard, HECO states:

An electronic control system increases the availability of major equipment through on-line monitoring. By implementing the self-correcting/diagnostic features of a modernized boiler control system, a positive shift can be made from corrective to predictive maintenance, reducing the impact of forced outages. Modification of control logic via Human Machine Interfaces ("HMI") will take the place of equipment and hardware replacements. HECO will also take advantage of the computing and diagnostic capabilities inherent in computer-based control systems to assist the operator in decision-making and reacting to system disturbances, as well as to assist the maintenance personnel in troubleshooting and planning.⁸

HECO claims that it evaluated a "do nothing" alternative (as it did for other generating unit boiler control projects), but explained the problems associated with this alternative:

The failure of a control component such as a positioner or controller (e.g., valve positioner or damper drive) in the existing control system could result in a unit outage

⁷Id. at 4-5.

⁸Id. at 5.

until it is repaired. The duration of the unit outage would depend on the availability of replacement parts or equipment, and the type of equipment (electronic versus pneumatic). Additional outage time could result from having to run cables, cable tray, and/or conduit to replace an existing pneumatic instrument with a new electronic instrument.⁹

According to HECO, generation forecasts do not indicate that the new boiler control system will increase future utilization of Waiau Unit 8; and the Project is consistent with the assumption that Waiau Unit 8 operations will continue at least to the service review date of 2035. Overall, HECO contends that the Project "pursues a cost-effective solution for replacing the existing boiler controls system to ensure that the unit can continue to supply energy to HECO's system in a reliable and cost-effective manner."¹⁰

4.

Project Cost

HECO attached a Cost Estimate for the Project as Exhibit III to the Application, which indicates the following cost allocation for the Project:

⁹Id. at 6.

¹⁰Id.

Labor	\$954,296
On-Cost	<u>\$797,249</u>
Subtotal	\$1,751,546
Materials	\$1,283,387
Outside Services	\$820,912
Other	\$0
Allowance for Funds Used During Construction	<u>\$131,885</u>
Total Cost of Project	\$3,987,730
Estimated Contributions	<u>\$0</u>
Net Project Cost (Less Cash and In-kind Contributions)	\$3,987,730 ¹¹

B.

Consumer Advocate's Position

On January 11, 2008, the Consumer Advocate filed its Statement of Position ("CA's SOP"), informing the commission that it does not object to approval of the Application. Based on its review, the Consumer Advocate asserts that the Project is reasonable, and identifies the following factors in support of the Project:

- The availability of Waiau 8 is necessary as it is used to serve base load;
- The continued operation of Waiau 8 is estimated until at least its service review date of 2035;

¹¹HECO states that the Project cost is approximately \$240,000 and \$670,000 less than the \$4,229,000 and \$4,655,000 estimated costs for the Kahe 3 and Kahe 4 Boiler Control system projects, respectively. HECO also contends that the Project is consistent with its integrated resource plan. See Application at 7-8.

- The manufacturer no longer supports the pneumatic controls of the existing Waiau 8 boiler control system; and
- HECO asserts that there are currently no scheduled maintenance overhauls on Waiau 8 following the 2010 overhaul (through 2011) that are long enough in duration to perform the proposed boiler control system upgrade work.¹²

The Consumer Advocate additionally noted:

Further, HECO foresees a reserve capacity shortfall till 2012 with an approximate 70 MW shortfall in the 2007-2008 period and a 20 MW to 40 MW shortfall in the 2009-2012 period with the new Campbell Industrial Park generating unit. As such, the need for the availability and operation of Waiau 8 becomes even more critical to meet the electrical demands of HECO's customers. Based on the above, it appears that the upgrade of the existing Waiau 8 boiler control system is necessary.¹³

II.

Discussion

This is a capital expenditure docket, review of which is governed by G.O. No. 7, which states, in relevant part:

¹²CA's SOP at 5.

¹³Id. at 6 (footnote omitted). Although the Consumer Advocate did not object to approval of the Application, it expressed certain concerns relating to the Project, including: project costs for prior boiler control upgrades have increased significantly from HECO's original estimates; HECO may encounter delays with the Project, which may impact Project costs; and given the forecasted reserve capacity shortfalls, HECO may encounter difficulties in the future in scheduling the maintenance of its generating units to ensure the reliability and availability of these units. The Consumer Advocate recognized that its last concern is beyond the scope of this proceeding, but recommended that the issue be addressed in HECO's next integrated resource plan. See id. at 9-10.

Proposed capital expenditures for any single project related to plant replacement, expansion or modernization, in excess of [\$2,500,000]¹⁴ or 10 per cent of the total plant in service, whichever is less, shall be submitted to the Commission for review at least 60 days prior to the commencement of construction or commitment for expenditure, whichever is earlier.¹⁵

Pursuant to G.O. No. 7, and after careful consideration and review of the entire record in this proceeding, the commission finds that the Project, as set forth in the Application, is reasonable and in the public interest. The record indicates that the proposed upgrades to the Waiau 8 boiler control system are necessary to ensure that the unit can continue to reliably serve HECO's base load. The Project contemplates upgrades that are consistent with the power generation industry's phasing out of the technology that is currently used by the system, and replacing it with more reliable and flexible technology. Moreover, in light of HECO's forecasted reserve capacity shortfall, the Project appears particularly critical to meeting the demands of HECO's customers over the coming years. Accordingly, the Application should be approved.

¹⁴In Docket No. 03-0257, the commission increased the monetary threshold governing the filing of capital expenditure applications, from \$500,000 to \$2.5 million, exclusive of customer contributions, effective July 1, 2004. See Decision and Order No. 21002, filed on May 27, 2004, in Docket No. 03-0257.

¹⁵G.O. No. 7, Paragraph 2.3(g)(2). Paragraph 2.3(g)(2) further provides that, if the commission does not act on a public utility's capital expenditure application and render a decision and order within 90 days of filing, the utility will be allowed to include the project in its rate base without a determination by the commission that is required under G.O. No. 7. The commission notes that the 90-day period for the commission to issue a decision and order on HECO's Application is January 28, 2008. Thus, the commission timely issues this Decision and Order under G.O. No. 7.

III.

Orders

THE COMMISSION ORDERS:

1. HECO's request to commit approximately \$3,987,730 for Item P7650000, the Waiiau 8 Boiler Control System Upgrade Project, as described in the Application, is approved; provided that no part of the Project may be included in HECO's rate base unless and until the Project is in fact installed, and is used and useful for public utility purposes.

2. HECO shall file a report within sixty (60) days of the Project's operation, with an explanation of any deviation of ten percent or more in the Project's actual cost from that estimated in the Application. HECO's failure to submit this report will constitute cause to limit the cost of the Project, for ratemaking purposes, to that estimated in the Application.

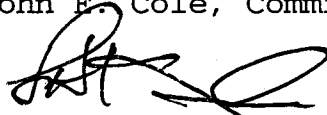
3. HECO shall conform to the commission's order set forth in paragraph 2, above. The failure to adhere to the commission's order shall constitute cause for the commission to void this Decision and Order, and may result in further regulatory action as authorized by law.

DONE at Honolulu, Hawaii JAN 28 2008.


PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

By: 
Carlito P. Caliboso, Chairman

By: 
John E. Cole, Commissioner

By: 
Leslie H. Kondo, Commissioner

APPROVED AS TO FORM:


Kaiulani Kidani Shinsato
Commission Counsel

2007-0365.eh

CERTIFICATE OF SERVICE

I hereby certify that I have on this date served a copy of the foregoing Decision and Order No. 23983 upon the following parties, by causing a copy hereof to be mailed, postage prepaid, and properly addressed to each such party.

CATHERINE P. AWAKUNI
EXECUTIVE DIRECTOR
DIVISION OF CONSUMER ADVOCACY
DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS
P. O. Box 541
Honolulu, HI 96809

WILLIAM A. BONNET
VICE PRESIDENT - GOVERNMENT AND COMMUNITY AFFAIRS
HAWAIIAN ELECTRIC COMPANY, INC.
P. O. Box 2750
Honolulu, HI 96840-0001

DEAN K. MATSUURA
DIRECTOR - REGULATORY AFFAIRS
HAWAIIAN ELECTRIC COMPANY, INC.
P. O. Box 2750
Honolulu, HI 96840-0001



Karen Higashi

DATED: JAN 28 2008